

FINAL REPORT

Limited Scope Indoor Air Quality Survey
SSMC II

for

National Oceanic & Atmospheric Administration

June 4th through 6th, 2002

Interagency Agreement #: D8H02CO31200
Task: 9903

September 16, 2002

Prepared by
US Public Health Service
Division of Federal Occupational Health
Bethesda Central Office

Executive Summary

At the request of the National Oceanic & Atmospheric Administration (NOAA), Federal Occupational Health (FOH) collected indoor air quality measurements for temperature, relative humidity, carbon dioxide, carbon monoxide, and airborne fungal spores throughout Building SSMC-2, located at 1325 East-West Highway, Silver Spring, Maryland. Measurements were taken on June 4th through 6th, 2002 following the methodology described below.

Temperatures throughout the building over the time period measured ranged from 71-78⁰F. Indoor relative humidity ranged from 39-59%.

Current guidelines of the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 55-1995 (Thermal Environmental Conditions for Human Occupancy) recommend temperatures in the range of 68-75⁰F in winter season and 73-79⁰F summer season, along with maintaining 30 - 60% relative humidity. These ranges are based on a 10% dissatisfaction criterion.

Carbon dioxide measurements provide an indicator of available “fresh air” in the space. Current standards describe indoor carbon dioxide levels below 850 ppm (AIHA), or no greater than a 700 ppm differential between outside and inside air concentrations (ASHRAE 62-1999) as generally acceptable. Carbon dioxide measurements throughout the building ranged from 627-1086 ppm. Carbon dioxide measured outdoors was 375-407 ppm.

Carbon monoxide measurements recorded ranged from 0-2 ppm. The permissible exposure limit for CO is 50 ppm. The "Industrial Hygienist's Guide to Indoor Air Quality Investigations" published by the American Industrial Hygiene Association, Technical Committee on Indoor Environmental Quality cites < 9 ppm average as acceptable. There were no combustion sources in the building to cause elevated CO, and outdoor measurements were 0 ppm.

With regard to microbial sampling, indoor fungal levels were generally lower than those of outdoors and fungi detected indoors were similar to those detected outdoors.

Introduction

At the request of the National Oceanic & Atmospheric Administration (NOAA), Federal Occupational Health (FOH) performed a limited scope indoor air quality investigation of Building SSMC-2, located at 1325 East-West Highway, Silver Spring, Maryland. The investigation took place on June 4th through 6th, 2002. Evaluation methodologies and results are presented in the following report.

Evaluation Methods

Measurements of temperature, relative humidity, carbon monoxide, and carbon dioxide were taken in eight locations on each floor of the building as indicators of relative indoor air quality using a TSI Q Trak IAQ monitor, model 8550/8551. Each floor was designated into two zones on either side of the elevator lobby. Four measurements were taken in each zone in randomly selected locations on the interior and exterior of the floor.

Air samples for fungal contamination were collected by a culturable method using Andersen N-6 samplers at a flow rate of 28.3 L/min. Indoor Andersen air samples were collected for 3 minutes and outdoor samples were collected for both one and three minutes. Two percent (2 %) malt extract agar (MEA) was used to recover general fungi. All plates were incubated in a 25°C incubator and were examined every other day for up to 10 days to ensure the full recovery of fungi. Fungal identification was based on colony morphology, spores and conidia formation. Total fungal colonies formed on each plate were counted and recorded. Fungal levels in samples were presented as colony forming units (CFUs) per measuring unit.

Standards/Criteria

The IAQ Assessment followed general guidelines specified by the Environmental Protection Agency "Building Air Quality" Guide for Building Owners and

Facility Managers, and the "Industrial Hygienist's Guide to Indoor Air Quality Investigations" published by the American Industrial Hygiene Association, Technical Committee on Indoor Environmental Quality.

ASHRAE Standard 55-1995 (Thermal Environmental Conditions for Human Occupancy) recommends temperatures in the range of 68-75⁰F in winter season and 73-79⁰F Summer season. These ranges are based on a 10% dissatisfaction criterion. The recommended relative humidity range is 30 - 60%.

Carbon monoxide levels should be 0-2 parts per million (ppm) above ambient, < 9 ppm average. Carbon Dioxide levels should remain < 850 ppm ("Industrial Hygienist's Guide to Indoor Air Quality Investigations" published by the American Industrial Hygiene Association, Technical Committee on Indoor Environmental Quality). ASHRAE 62-1999 recommends indoor carbon dioxide levels no greater than 700 ppm higher than outdoor levels (outdoor levels generally range from 300-500 ppm).

There are no “standards” for building microbial burden. Complaint areas are generally compared with non-complaint areas and outside air.

Results and Conclusions

Temperature, relative humidity, carbon dioxide, and carbon monoxide measurements by location are tabulated in Attachment A.

Microbial results are tabulated in Attachment A and B.

Temperatures throughout the building over the time period measured ranged from 71-78⁰F. Indoor relative humidity ranged from 39-59%

Carbon dioxide measurements provide an indicator of available “fresh air” in the space. Current standards describe indoor carbon dioxide levels below 850 ppm (AIHA), or no greater than a 700 ppm differential between outside and inside air concentrations (ASHRAE 62-1999) as generally acceptable. Carbon dioxide measurements throughout the building ranged from 627-1086 ppm. Carbon dioxide measured outdoors was 375-407 ppm.

Carbon monoxide measurements recorded ranged from 0-2 ppm. The permissible exposure limit for CO is 50 ppm. The "Industrial Hygienist's Guide to Indoor Air Quality Investigations" published by the American Industrial Hygiene Association, Technical Committee on Indoor Environmental Quality cites < 9 ppm average as acceptable. There were no combustion sources in the building to cause elevated CO, and outdoor measurements were 0 ppm.

With regard to microbial sampling, indoor fungal levels were generally lower than those of outdoors and fungi detected indoors were similar to those detected outdoors.

Recommendations

Based upon this limited scope investigation, DFOH

1. maintains the position that the HVAC system should be routinely maintained and checked to ensure all components are properly operating, and that fresh air is adequately distributed to occupied spaces;
2. recommends routine visual inspections of the building to detect any water intrusion from outdoors or water leaks originating from indoor plumbing .

***U.S. Public Health Service, Division of Federal Occupational Health
Indoor Air Quality Survey Report---Q Trak Data Log
for the
National Oceanic and Atmospheric Administration, Silver Spring, MD***

Survey Methodology:

This table sample data collected during the National Oceanic & Atmospheric administration (NOAA) Limited Scope Indoor Air Qua;ity survey for SSMC II, III, and IV. The survey was conducted in accordance with NOAA project specifications. Eight sample locations were

identified on each floor of Building 2, Building 3, and Building 4. Carbon dioxide, carbon monoxide, relative humidity, and temperature readings were collected at each location twice a day using a TSI Q Trak IAQ monitor. In addition to the IAQ readings, four of the eight sample locations were selected for airborne fungal sample collection by a culturable method using an Anderson N-6 sampler. Daily outside

building air samples were collected for comparison.

Data Collected By: Gary McNaughton

Building: 2

Floor: 1

Date Samples: 06/06/02

PERIOD I										PERIOD II								
Sample Site	Outside	Museum	Museum	NOAA	NOAA	Main Elev.	Guard	NOAA Store Lob	Travel Agency	Outside	Museum	Museum	NOAA	NOAA	Main Elev.	Guard	NOAA Store Lob	Travel Agency
	Building	Entry	Display	Store	Store	Lobby	Station			Building	Entry	Display	Store	Store	Lobby	Station		
Time	9:00am	9:15am	9:31am	9:47am	10:03am	10:22am	10:40am	10:58am	11:16am	2:30pm	2:45pm	3:02pm	3:18pm	3:37pm	3:54pm	4:14pm	4:31pm	4:48pm
Temperature	78	74	74	74	74	73	73	72	73	81	73	74	74	74	73	74	74	73
Relative Humidity	62	59	59	59	59	60	59	58	57	60	58	58	59	59	59	59	57	59
Carbon Dioxide	398	787	784	722	722	730	730	718	720	395	790	783	740	730	733	731	720	721
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	3	4	n/a	n/a	n/a	n/a
Results in CFU/m ³	11201	1072	400	n/a	n/a	n/a	n/a	n/a	n/a	12968	n/a	n/a	318	224	n/a	n/a	n/a	n/a

Notes

Data Collected By: Gary McNaughton

Building: 2

Floor: 2

Date Samples: 06/06/02

PERIOD I										PERIOD II								
Sample Site	Outside	Rm 2311	Rm 2358	Rm 2378	Rm 2358	Rm 2222	Rm 2231	Rm 2246	Rm 2246A	Outside	Rm 2311	Rm 2358	Rm 2378	Rm 2358	Rm 2222	Rm 2231	Rm 2246	Rm 2246A
	Building									Building								
Time	8:00am	8:16am	8:33am	8:52am	9:15am	9:31am	9:47am	10:03am	10:19am	2:30pm	1:18pm	1:35pm	1:50pm	2:06pm	2:27pm	2:44pm	3:00pm	3:16pm
Temperature	78	71	71	71	71	71	71	71	71	81	73	71	72	72	71	71	71	71
Relative Humidity	62	53	54	53	54	52	51	52	52	60	49	54	54	53	52	51	52	52

Executive Summary

Carbon Dioxide	398	752	750	751	752	738	737	715	713	395	850	823	820	852	855	810	826	851
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	n/a	3	4	n/a
Results in CFU/m ³	11201	35	12	n/a	n/a	n/a	n/a	n/a	n/a	12968	n/a	n/a	n/a	n/a	n/a	35	94	n/a

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 3** **Date Samples: 06/06/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 3300	Rm 3354	Rm 3355	Rm 3364	Rm 3426	Rm 3466	Rm 3156	Rm 3236	Outside Building	Rm 3300	Rm 3354	Rm 3355	Rm 3364	Rm 3426	Rm 3466	Rm 3156	Rm 3236
Time	8:00am	11:16am	11:35am	11:54am	12:10pm	12:26pm	12:45pm	1:04pm	1:22pm	2:30pm	3:18pm	3:37pm	3:56pm	4:11pm	4:30pm	4:46pm	5:03pm	5:20pm
Temperature	78	73	73	73	74	72	73	73	73	81	73	73	73	73	72	72	73	72
Relative Humidity	62	48	47	48	47	46	47	47	47	60	48	48	48	48	48	48	48	48
Carbon Dioxide	398	828	781	790	800	744	750	775	758	395	875	820	821	825	812	822	825	864
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	3	n/a	n/a	4
Results in CFU/m ³	11201	12	<12	n/a	n/a	n/a	n/a	n/a	n/a	12968	n/a	n/a	n/a	n/a	12	n/a	n/a	<12

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 4** **Date Samples: 06/06/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 4323	Rm 4365	Rm 4344	Rm 4428	Rm 4103	Rm 4464	Rm 4206	Rm 4205	Outside Building	Rm 4323	Rm 4365	Rm 4344	Rm 4428	Rm 4103	Rm 4464	Rm 4206	Rm 4205
Time	8:00am	11:15am	11:30am	11:47am	12:03pm	12:23pm	12:41pm	1:00pm	1:16pm	2:30pm	4:01pm	4:18pm	4:37pm	4:56pm	5:12pm	5:30pm	5:45pm	6:00pm
Temperature	78	72	72	73	73	73	72	73	73	81	72	73	73	72	73	72	73	73
Relative Humidity	62	47	44	48	48	48	48	48	48	60	47	52	48	48	48	48	48	48
Carbon Dioxide	398	813	830	775	799	807	821	901	828	395	875	915	870	870	890	896	891	921
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	n/a	2	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	3	4	n/a	n/a	n/a
Results in CFU/m ³	11201	35	n/a	12	n/a	n/a	n/a	n/a	n/a	12968	n/a	n/a	n/a	24	12	n/a	n/a	n/a

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 5** **Date Samples: 06/06/02**

PERIOD I										PERIOD II								
Sample Site	Outside	Rm 5300	Rm 5323	Rm 5309	Rm 5338	Rm 5426	Rm 5100	Nearby Rm 5103	Rm 5154	Outside	Rm 5300	Rm 5323	Rm 5309	Rm 5338	Rm 5426	Rm 5100	Nearby Rm 5103	Rm 5154
	Building									Building								
Time	8:00am	10:15am	10:31am	10:47am	11:04am	11:21am	11:40am	11:56am	12:13pm	2:30pm	2:45pm	3:02pm	3:21pm	3:40pm	3:55pm	4:12pm	4:32pm	4:50pm
Temperature	78	74	72	73	73	72	73	73	73	81	74	73	73	73	72	72	72	72
Relative Humidity	62	48	48	48	49	49	49	48	49	60	50	50	50	49	50	50	50	50
Carbon Dioxide	398	827	798	841	825	875	815	800	816	395	835	850	852	875	854	853	842	825
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	3	n/a	4	n/a
Results in CFU/m ³	11201	24	<12	n/a	n/a	n/a	n/a	n/a	n/a	12698	n/a	n/a	n/a	n/a	<12	n/a	12	n/a

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 6** **Date Samples: 06/06/02**

PERIOD I										PERIOD II								
Sample Site	Outside	CCC Area	AOMC Area	NCF Area	Rm 6323	Rm 6168	Rm 6148	Rm 6118	Kitchen	Outside	CCC Area	AOMC Area	NCF Area	Rm 6323	Rm 6168	Rm 6148	Rm 6118	Kitchen
	Building									Building								
Time	8:00am	10:15am	10:31am	10:48am	11:04am	11:21am	11:40am	11:57am	12:13pm	2:30pm	3:21pm	3:40pm	3:55pm	4:12pm	4:32pm	4:50pm	5:10pm	5:27pm
Temperature	78	72	73	73	73	72	73	72	73	81	74	72	72	73	71	72	72	72
Relative Humidity	62	44	44	45	45	39	39	39	50	60	44	42	46	46	40	40	40	40
Carbon Dioxide	398	960	890	899	890	803	831	825	720	395	1028	1064	1074	1086	855	850	859	811
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	3	n/a	4	n/a	n/a	n/a
Results in CFU/m ³	11201	<12	<12	n/a	n/a	n/a	n/a	n/a	n/a	12698	n/a	n/a	12	n/a	12	n/a	n/a	n/a

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 7** **Date Samples: 06/05/02**

PERIOD I										PERIOD II								
Sample Site	Outside	Rm 7224	Rm 7254	Rm 7214	Rm 7162	Rm 7144	Rm 7120	Rm 7460	Rm 7205	Outside	Rm 7224	Rm 7254	Rm 7214	Rm 7162	Rm 7144	Rm 7120	Rm 7460	Rm 7205
	Building									Building								
Time	10:00am	10:16am	10:31am	10:47am	11:05am	11:21am	11:40am	11:56am	12:15pm	4:15pm	4:50pm	5:10pm	5:27pm	5:44pm	6:00pm	6:15pm	6:32pm	6:49pm
Temperature	79	72	74	74	74	74	73	73	72	85	73	73	72	71	73	72	73	73
Relative Humidity	53	54	51	48	48	53	54	54	55	56	55	55	54	55	56	54	56	56
Carbon Dioxide	407	627	784	762	743	682	876	628	669	398	750	740	760	757	753	761	748	749
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Executive Summary

Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	4	n/a	3	n/a
Results in CFU/m ³	424	35	24	n/a	n/a	n/a	n/a	n/a	n/a	1060	n/a	n/a	n/a	n/a	<12	n/a	<12	n/a

Notes

Data Collected By: Gary McNaughton

Building: 2

Floor: 8

Date Samples:
06/05/02

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 8246	Rm 8212	Rm 8176	Rm 8105	Rm 8452	Rm 8410	Rm 8365	Rm 8346	Outside Building	Rm 8246	Rm 8212	Rm 8176	Rm 8105	Rm 8452	Rm 8410	Rm 8365	Rm 8346
Time	10:00am	10:15am	10:31am	10:47am	11:04am	11:23am	11:40am	11:57am	12:15pm	4:15pm	4:32pm	4:51pm	5:07pm	5:26pm	5:45pm	6:01pm	6:17pm	6:35pm
Temperature	79	73	73	74	73	73	73	72	73	85	72	71	71	71	72	73	72	71
Relative Humidity	53	51	52	52	51	52	51	51	52	56	51	50	52	51	50	51	52	51
Carbon Dioxide	407	673	712	721	712	811	682	693	686	398	912	916	890	871	886	875	890	898
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	0	1	0
Air Sample #	A	1	n/a	2	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	3	n/a	n/a	n/a	n/a
Results in CFU/m ³	424	<12	n/a	<12	n/a	n/a	n/a	n/a	n/a	1060	n/a	n/a	n/a	12	n/a	n/a	n/a	n/a

Notes

Data Collected By: Gary McNaughton

Building: 2

Floor: 9

Date Samples:
06/05/02

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 9470	Rm 9426	Kitchen by 9382	Rm 9344	Rm 9327	Rm 9158	Rm 9310	Rm 9364	Outside Building	Rm 9470	Rm 9426	Kitchen by 9382	Rm 9344	Rm 9327	Rm 9158	Rm 9310	Rm 9364
Time	10:00am	9:56am	10:11am	10:30am	10:48am	11:10am	11:25am	11:41am	12:00pm	4:15pm	3:46pm	4:02pm	4:22pm	4:39pm	4:57pm	5:14pm	5:30pm	5:45pm
Temperature	79	76	75	73	74	74	72	73	73	85	71	72	72	71	73	71	71	71
Relative Humidity	53	46	45	45	47	47	46	47	47	56	51	51	50	52	51	51	50	52
Carbon Dioxide	407	777	774	705	805	813	741	720	728	398	885	889	892	998	904	915	916	920
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	n/a	2	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	3	n/a	n/a	4
Results in CFU/m ³	424	<12	n/a	<12	n/a	n/a	n/a	n/a	n/a	1060	n/a	n/a	n/a	n/a	59	n/a	n/a	12

Notes

Data Collected By: Gary McNaughton

Building: 2

Floor: 10

Date Samples:
06/05/02

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 10323	Rm 10232	Rm 10204	Rm 10105	Rm 10468	Rm 10426	Rm 10361	Rm 10353	Outside Building	Rm 10323	Rm 10232	Rm 10204	Rm 10105	Rm 10468	Rm 10426	Rm 10361	Rm 10353
Time	10:00am	9:30am	9:47am	10:10am	10:26am	10:43am	11:00am	11:15am	11:32am	4:15pm	3:02pm	3:21pm	3:40pm	3:56pm	4:12pm	4:34pm	4:50pm	5:12pm
Temperature	79	73	73	73	74	73	74	75	76	85	75	75	76	74	75	75	75	74
Relative Humidity	53	47	47	47	47	46	46	46	45	56	45	45	45	45	45	45	46	46
Carbon Dioxide	407	725	757	766	717	711	687	732	702	398	882	844	832	824	851	824	842	837
Carbon Monoxide	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	n/a	n/a	n/a	2	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	n/a	n/a	3	4
Results in CFU/m ³	424	<12	n/a	n/a	n/a	12	n/a	n/a	n/a	1060	n/a	n/a	n/a	n/a	n/a	n/a	59	35

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 11** **Date Samples: 06/05/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 11323	Rm 11236	Rm 11111	Rm 11104	Rm 11472	Nearby 11426	Rm 11365	Rm 11348	Outside Building	Rm 11323	Rm 11236	Rm 11111	Rm 11104	Rm 11472	Nearby 11426	Rm 11365	Rm 11348
Time	10:00am	10:16am	10:33am	10:52am	11:08am	11:30am	11:45am	12:00pm	12:16pm	4:15pm	2:45pm	3:01pm	3:21pm	3:39pm	3:55pm	4:12pm	4:32pm	4:49pm
Temperature	79	75	75	75	76	75	76	77	76	85	76	76	75	75	76	75	74	75
Relative Humidity	53	46	46	45	45	46	45	46	46	56	45	45	46	44	45	44	45	45
Carbon Dioxide	407	750	763	769	776	767	780	781	773	398	784	784	777	785	798	761	766	761
Carbon Monoxide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Sample #	A	1	n/a	2	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	n/a	n/a	3	n/a	4
Results in CFU/m ³	424	24	n/a	<12	n/a	n/a	n/a	n/a	n/a	1060	n/a	n/a	n/a	n/a	n/a	12	n/a	24

Notes

Data Collected By: Gary McNaughton **Building: 2** **Floor: 12** **Date Samples: 06/05/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 12246	Rm 12323	Rm 12152	Rm 12105	Rm 12470	Rm 12424	Rm 12365	Rm 12338	Outside Building	Rm 12246	Rm 12323	Rm 12152	Rm 12105	Rm 12470	Rm 12424	Rm 12365	Rm 12338
Time	10:00am	10:16am	10:31am	10:47am	11:04am	11:24am	11:40am	11:57am	12:17pm	4:15pm	2:15pm	2:30pm	2:45pm	3:00pm	3:16pm	3:36pm	3:54pm	4:10pm
Temperature	79	75	74	74	74	74	74	74	74	85	76	75	75	72	72	73	74	73
Relative Humidity	53	46	46	46	46	46	46	47	46	56	43	43	44	45	46	46	46	46
Carbon Dioxide	407	823	801	873	786	812	963	902	852	398	802	783	812	814	792	850	765	810
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	0
Air Sample #	A	1	2	n/a	n/a	n/a	n/a	n/a	n/a	C	n/a	n/a	n/a	4	n/a	3	n/a	n/a
Results in CFU/m ³	424	12	12	n/a	n/a	n/a	n/a	n/a	n/a	1060	n/a	n/a	n/a	12	n/a	<12	n/a	n/a

Notes

Data Collected By: John Miller**Building: 2****Floor: 13****Date Samples:
06/04/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 13305	Rm 13112	Rm 13375	Rm 13430	Rm 13344	Rm 13208	Rm 13242	Rm 13323	Outside Building	Rm 13305	Rm 13112	Rm 13375	Rm 13430	Rm 13344	Rm 13208	Rm 13242	Rm 13323
Time	11:30am	11:46am	12:01pm	12:17pm	12:37pm	12:55pm	1:15pm	1:30pm	1:46pm	3:00pm	3:16pm	3:32pm	3:51pm	4:07pm	4:26pm	4:45pm	5:01pm	5:30pm
Temperature	74	74	74	74	74	73	73	73	74	81	73	73	73	73	73	74	74	74
Relative Humidity	51	46	46	46	47	47	47	47	47	46	47	47	47	47	47	47	47	47
Carbon Dioxide	375	848	912	864	898	871	841	886	908	395	946	877	890	895	896	839	862	894
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Air Sample #		1	2	n/a	n/a	n/a	n/a	n/a	n/a	D	n/a	n/a	n/a	3	4	n/a	n/a	n/a
Results in CFU/m ³		24	35	n/a	n/a	n/a	n/a	n/a	n/a	919	n/a	n/a	n/a	<12	24	n/a	n/a	n/a

Notes

Data Collected By: John Miller**Building: 2****Floor: 14****Date Samples:
06/04/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 14375	Rm 14316	Mailroom 14356	Confer. 14356	Rm 14420	Rm 14130	Rm 14201	Rm 14130	Outside Building	Rm 14375	Rm 14316	Rm 14356	Rm 14401	Rm 14420	Rm 14130	Rm 14201	Rm 14130
Time	11:30am	10:16am	10:33am	10:52am	11:10am	11:26am	11:45am	12:00pm	12:21pm	3:00pm	2:46pm	3:03pm	3:20pm	3:36pm	3:55pm	4:10pm	4:27pm	4:46pm
Temperature	74	73	72	73	73	73	74	75	74	81	71	72	73	72	73	74	73	74
Relative Humidity	51	48	49	50	49	48	48	48	47	46	49	49	49	49	49	49	48	50
Carbon Dioxide	375	874	815	936	867	859	849	893	886	395	878	832	958	849	849	845	825	840
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Air Sample #		n/a	n/a	1	2	n/a	n/a	n/a	n/a	D	n/a	n/a	n/a	n/a	n/a	n/a	3	4
Results in CFU/m ³		n/a	n/a	12	47	n/a	n/a	n/a	n/a	919	n/a	n/a	n/a	n/a	n/a	n/a	24	<12

Notes

Data Collected By: John Miller**Building: 2****Floor: 15****Date Samples:
06/04/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 15323	Rm 15300	Rm 151612	Rm 15132	Rm 15212	Rm 15254	Rm 15410	Rm 15364	Outside Building	Rm 15323	Rm 15300	Rm 15162	Rm 15132	Rm 15212	Rm 15254	Rm 15410	Rm 15364
Time	11:30am	10:06am	10:25am	10:41am	10:57am	11:14am	11:30am	11:46am	12:02pm	3:00pm	2:47pm	3:05pm	3:21pm	3:40pm	4:00pm	4:15pm	4:32pm	4:49pm

Executive Summary

Temperature	74	73	73	73	72	72	71	71	76	81	71	74	73	72	72	74	72	73
Relative Humidity	51	45	47	46	47	47	48	48	49	46	47	45	45	46	46	44	44	45
Carbon Dioxide	375	795	908	792	917	822	831	808	813	395	848	865	870	873	857	890	842	861
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Air Sample #		2	1	n/a	n/a	n/a	n/a	n/a	n/a	D	n/a	n/a	3	n/a	n/a	n/a	4	n/a
Results in CFU/m ³		24	47	n/a	n/a	n/a	n/a	n/a	n/a	919	n/a	n/a	<12	n/a	n/a	n/a	12	n/a

Notes

Data Collected By: John Miller **Building: 2** **Floor: 16** **Date Samples: 06/04/02**

PERIOD I										PERIOD II								
Sample Site	Outside	Rm	Rm	Rm	Rm	Rm	Rm	Rm	Rm	Outside	Rm	Rm	Rm	Rm	Rm	Rm	Rm	Rm
	Building	16236	16170	16105	16413	16342	16300	16348	16138	Building	16236	16170	16105	16413	16342	16300	16348	16138
Time	11:30am	10:46am	11:02pm	11:20am	11:35am	11:54am	12:10pm	12:26pm	12:45pm	3:00pm	3:16pm	3:35pm	3:53pm	4:10pm	4:26pm	4:45pm	5:00pm	5:18pm
Temperature	74	75	76	75	74	75	75	74	74	81	75	75	74	74	75	76	74	78
Relative Humidity	51	45	45	44	44	44	44	44	47	46	47	46	45	45	45	42	42	44
Carbon Dioxide	375	887	894	888	945	910	936	902	1034	395	914	970	976	963	987	947	936	990
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Air Sample #		n/a	n/a	n/a	n/a	n/a	1	2	n/a	D	n/a	n/a	3	n/a	n/a	n/a	n/a	4
Results in CFU/m ³		n/a	n/a	n/a	n/a	n/a	12	24	n/a	919	n/a	n/a	12	n/a	n/a	n/a	n/a	35

Notes

Data Collected By: John Miller **Building: 2** **Floor: 17** **Date Samples: 06/04/02**

PERIOD I										PERIOD II								
Sample Site	Outside	Rm	Rm	Rm	Rm	Rm	Rm	Rm	Rm	Outside	Rm	Rm	Rm	Rm	Rm	Rm	Rm	Rm
	Building	17436	17345	17352	17365	17424	17130	17206	17250	Building	17436	17345	17352	17365	17424	17130	17206	17250
Time	11:30am	10:31am	10:47am	11:04am	11:23am	11:41am	11:59am	12:15pm	12:31pm	3:00pm	3:16pm	3:33pm	3:53pm	4:10pm	4:25pm	4:40pm	4:55pm	5:12pm
Temperature	74	74	73	74	77	75	73	73	74	81	73	73	72	75	74	73	72	75
Relative Humidity	51	46	45	46	46	45	45	45	46	46	46	46	46	47	47	47	47	46
Carbon Dioxide	375	866	814	850	837	833	846	848	861	395	956	929	952	961	984	1003	1033	929
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Air Sample #		n/a	n/a	n/a	n/a	n/a	2	n/a	1	D	3	n/a	n/a	4	n/a	n/a	n/a	n/a
Results in CFU/m ³		n/a	n/a	n/a	n/a	n/a	<12	n/a	59	919	35	n/a	n/a	12	n/a	n/a	n/a	n/a

Notes

Data Collected By: John Miller **Building: 2** **Floor: 18** **Date Samples: 06/04/02**

PERIOD I										PERIOD II								
Sample Site	Outside Building	Rm 18100	Rm 18176	Rm 18365	Rm 18348	Rm 18355	Rm 18300	Rm 18122	Rm 18323	Outside Building	Rm 18100	Rm 18176	Rm 18352	Rm 18348	Rm 18355	Rm 18300	Rm 18122	Rm 18323
Time	11:30am	10:01am	10:17am	10:37am	10:52am	11:04am	11:22am	11:41am	11:58am	3:00pm	1:46pm	2:03pm	2:18pm	2:38pm	2:55pm	3:10pm	3:26pm	3:45pm
Temperature	74	75	75	74	73	74	74	74	74	81	73	72	74	73	73	73	74	75
Relative Humidity	51	44	45	46	46	47	47	47	48	46	48	48	48	47	48	48	48	48
Carbon Dioxide	375	691	713	729	677	760	745	778	731	395	723	838	864	864	901	839	847	834
Carbon Monoxide	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Air Sample #		n/a	2	n/a	n/a	n/a	n/a	1	n/a	D	n/a	n/a	4	n/a	n/a	n/a	n/a	3
Results in CFU/m³		n/a	47	n/a	n/a	n/a	n/a	24	n/a	919	n/a	n/a	<12	n/a	n/a	n/a	n/a	35

Notes